

Date: Sun, 17 Oct 93 04:30:14 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #81
To: Ham-Ant

Ham-Ant Digest

Sun, 17 Oct 93

Volume 93 : Issue 81

Today's Topics:

2 mtr j-pole on 440?

CP antennas was (Re: Lindenblad Antenna)

Mobile Antennas

multiband HF loop antenna

Proper J-Pole Grounding

Want to make a simple TV ANTENNA

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>

Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available (by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text herein consists of personal comments and does not represent the official policies or positions of any party. Your mileage may vary. So there.

Date: Fri, 15 Oct 1993 20:02:28 GMT

From: pacbell.com!att-out!cbfsb!cbnews!cbnewst!cbnewsm!hellman@network.ucsd.edu

Subject: 2 mtr j-pole on 440?

To: ham-ant@ucsd.edu

Several recent postings have described mounting 2 mtr and 440 j-pole antennas on the same mast. I have used my 2 mtr j-pole on 440 and it seemed to work ok (through repeaters). The swr appeared to be less than 2:1 at the rig end of the coax (I don't recall how much less). Of course I did not compare the performance to a 440 antenna, so I'd like to know if anyone has made that comparison and can describe the results. (I didn't switch between the j and the rubber thing-a-ma-jing to see which made a better attenuator but the j is a bit higher off ground level.) Anyone care to compute radiation patterns for this?

Shel WA2UBK dara@physics.att.com (ignore the header adr)

©2021 KAREN K. DALE karenkdale@comcast.net (Email the header and)

Date: Sat, 16 Oct 1993 14:04:45 GMT
From: swrinde!emory!rsiatl!ke4zv!gary@network.ucsd.edu
Subject: CP antennas was(Re: Lindenblad Antenna)
To: ham-ant@ucsd.edu

In article <2458@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.antenna, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>>
>>We make extensive use of CP for our mobile microwave relays used
>>in newsgathering. There, with CP antennas on both ends, we can
>>achieve marked reductions in ghosting. We also often take deliberate
>>advantage of multipath by aiming our antennas at a common high
>>obstruction, such as a tall building. By switching the receive
>>antenna to the reverse sense, we can often get clean pictures
>>from the reflection when the direct path is a mess of ghosts.
>
>What antenna gains are you using?

19 to 36 db. We use switchable Nurad horns on a 70 story hotel as one receive site. They claim 19 db of gain. We use a 4 foot Nurad dish on our tower at the 980 foot level with an autotrack mount. And we have an 8 foot dish on a 2360 foot mountain to the North with a Troll Technologies steerable mount. We used to use Nurad Golden Rods on the 40 foot masts in our old live trucks, but now we use offset feed dishes by Microwave Radio on the 50 foot pneumatic masts of our new trucks. They claim 24 db. Our helicopter uses Nurad switched horns similar to the hotel. That's all on 2 GHz with 10 watt transmitters. On 13 GHz we use 1 watt transmitters and ordinary CP horns of 30 db gain. They're mainly used for handheld relay to a truck or the helicopter. The helicopter is setup to operate as an airborne relay station as needed.

>With even 20 dBi of antenna gain, multipath
>is quite common between obstructed hilltop to hilltop
>paths. Using 30+ dBi dishes on both ends will often
>eliminate this effect on short paths. I remember one
>case when W1XP had to work for 15 or 20 minutes to
>complete a contact, with the signal fading in and out
>(19 dBi horn), while I had a strong steady signal on my
>30 dBi dish at the same time. Receivers were probably
>pretty close--think he had a 7 dB NF out of an optimized
>mixer and my setup way back when had a 6 dB system NF.
>
>This was on 10 GHz, where 30 dBi of gain isn't too
>difficult to get.
>
>For point to point fixed links, increasing antenna gain
>to eliminate multipath might make sense for some amateurs.

Raising the antennas up out of first Fresnel is usually much better, if possible. We don't use as much gain as we could for a couple of reasons. First we have to work with a helicopter, and too narrow a beamwidth causes tracking problems. And second, a really high gain dish is too much load for our pneumatic masts.

Gary

--
Gary Coffman KE4ZV | "If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam." | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

Date: 17 Oct 93 01:20:09 -0600
From: library.ucla.edu!agate!howland.reston.ans.net!vixen.cso.uiuc.edu!
moe.ksu.ksu.edu!engr.uark.edu!news.ualr.edu!eieio.ualr.edu!gdm@network.ucsd.edu
Subject: Mobile Antennas
To: ham-ant@ucsd.edu

Henry B. Smith (henrys@netcom.com) wrote:

[...]
::2. How do you tune the bugcatcher? Just tap the coil from the bottom and/or
[...]
: The problem that you have to overcome is that you dont have the
: foggiest notion where start tapping the coil for any particular band.

: I use a noise bridge and a general coverage receiver and about 2 or 3
: ft of coax. I set the tap and then tune the receiver for the lowest noise.
: Once there, I zero it in.

: I think that one of these new antenna meter gadgets would be great for this.
: You just hook it up and sweep through the frequencies looking for the
: lowest swr.

Unless the new bug-catcher owner has suitable test equipment, he can run himself ragged trying to find the bands on the coil. Your method is certainly better than what I've had to work with in the past (except for the brief time I had access to a spectrum analyzer with tracking generator and SWR bridge option. Now THAT is the way to go, if you can justify the several kilo-bucks expenditure. |-)

Otherwise, that new MFJ gizmo with the built-in frequency counter is a spiffy little thing, especially if you don't have a general-coverage receiver to use with a noise bridge, which I don't.

I wish it were an impedance bridge instead of merely an SWR bridge, though.

When I first got my bug-catcher, I found that the best thing I had for roughly finding the band was a long piece of dowel rod. I taped the end of the jumper wire to it, stood back from the antenna, and slid the clip up and down the coil listening for a background noise peak in the receiver which was set at mid-band. After finding a point on the coil that corresponded to a noise peak, I would clip the jumper there and check SWR. After much running back and forth between the rig and the antenna, one can eventually get the antenna tuned.

I realize that the traditional instrument for tuning a resonant circuit such as this is the grid-dip meter, but I don't have one and haven't been able to find a good one. Heaven forbid that I should have to build one! ;-)

Happy bug-catching!

--
- - - - Doug Mauldin - - - - University of Arkansas at Little Rock - - -
gdm@eieio.ualr.edu Graduate Institute of Technology
gdmauldin@ualr.edu Department of Electronics and Instrumentation
- standard disclaimers apply - - - - - - - - - - -

Date: Sat, 16 Oct 1993 22:41:31 GMT

From: library.ucla.edu!agate!howland.reston.ans.net!spool.mu.edu!torn!nott!cunews!
freenet.carleton.ca!Freenet.carleton.ca!ai701@network.ucsd.edu
Subject: multiband HF loop antenna
To: ham-ant@ucsd.edu

Would appreciate any ideas for coupling 50 ohm coax to wideband
(1.8-30 MHZ) loop antenna. Also any suggestions for remote
tuning of loop antenna to operating frequency.

Date: 15 Oct 93 05:50:08 GMT
From: ddsrw1!Chigate!Uucp@uunet.uu.net
Subject: Proper J-Pole Grounding
To: ham-ant@ucsd.edu

> Wherever Belden products are sold. However, braid is expensive,
> and not really good enough for the job. Much better is 5 inch
> wide copper flashing, available in rolls from roofing supply
houses

> and some electronics suppliers.

SBGee, Gary, why don't we suggest that the guy run 2" X 6" solid copper

bus bar! :-)

bankrupt yourself in the meantime. Additionally, I assert that shield

braid stripped off old, useless coax is a reasonable compromise.

Definitely true. The current ARRL Antenna Handbook recommends the use of

old coax braid shield and several other sources have published a rather

clever little wooden blade-holding jig for getting the jacket off the coax. It works. It is unobtrusive too (5" copper flashing????).

X SLMR 2.1a X

* Origin: Via RHO! * 708.238.1901. fname.lname@radiohobby.chigate.com
(1:115/747)

Date: 17 Oct 1993 02:50:22 GMT
From: concert!quad.wfunet.wfu.edu!ac!matthews@decwrl.dec.com
Subject: Want to make a simple TV ANTENNA
To: ham-ant@ucsd.edu

Margot Kronick (mkronick@herman.cs.uoguelph.ca) wrote:

: I know everyone in this news group is into HAM, so why is a bonehead like
: me posting a message asking about how to construct a simple TV antenna?
: Can you think of a better place to ask foolish antenna questions? Anyways
: I don't have the cash to by a new one nor can I afford cable, I live
: about 110km west of Toronto and I wouldn't mind catching the ball games. I
: receive only 2 stations, and ocassionally 3, but I know there is much more
: to be had. Currently I have the inards of an old patio umbrella hooked up
: to my chimney and a coaxial cable from this (spy-Satellite dish-like)
: contraption connected to my T.V.

The best and simplest antennae are work well only for a single channel. Is there one channel that is most important to you? Are you willing to build more than one antenna?

Get back to us with the details, which channels, etc., and we can fix you up. At 110 km, you probably don't need very much. Probably any resonant antenna in the attic or on the chimney should do.

If you want multiple channels, I would suggest building an antenna for your favorite. Reception may turn out to be good on the others and you can stop there.

--
Rick Matthews matthews@wfunet.wfu.edu Ham radio:
Wake Forest University 919-759-5340 (Voice) WA4GSP
Winston-Salem, NC 27109-7507 919-759-6142 (FAX)

Date: Sat, 16 Oct 1993 14:42:02 GMT
From: swrinde!emory!rsiatl!ke4zv!gary@network.ucsd.edu
To: ham-ant@ucsd.edu

References <SBROWN.930ct13064820@charon.dseg.ti.com>, <19930ct14.132609.2692@ke4zv.atl.ga.us>, <VERN.L.SUTER-151093131615@mac_arhbld3n2_140.subnet66.cdc.com>
Reply-To : gary@ke4zv.UUCP (Gary Coffman)
Subject : Re: Proper J-Pole Grounding

In article <VERN.L.SUTER-151093131615@mac_arhbld3n2_140.subnet66.cdc.com>
VERN.L.SUTER@cdc.com (Vern Suter) writes:
>In article <19930ct14.132609.2692@ke4zv.atl.ga.us>, gary@ke4zv.atl.ga.us
>(Gary Coffman) wrote:
>> Since my disastrous strike, I've been campaigning vigorously to
>> educate amateurs that you *can* avoid damage from direct strikes.
>> The belief that there's no protection from direct strike damage
>> is *myth*. It's equally myth that a blitz bug and a piece of #12
>> wire will protect you from nearby strikes. In fact, if you install
>> suppressors *slightly* wrong, they can be worse than no protective
>> measures at all. Let me repeat that since it's vitally important,
>> incorrectly installed suppressors can be worse than no suppressors
>> at all. The instructions that come with suppressors, if any, are
>> woefully incomplete and misleading. Ask an expert, or even better,
>> become an expert on the subject.
>
>What is the correct way to install the blitz bug or suppressor? Tnx.

Oh boy, this is a complicated subject. There are entire books published on it. One I recommend is The "Grounds" for Lightning and EMP Protection available from Polyphaser.

At the risk of leading you into one of those "slight" mistakes, I'll give some general guidelines. First, a single point ground system is vital. Ideally you will use the entrance bulkhead as the single point ground. *All* wires coming from and going to your station, that includes phone, power, and control cables as well as antenna lead ins, must pass

through this bulkhead, and all must be fed through proper suppressors that are firmly bonded to the bulkhead, mechanically and electrically. The bulkhead is then connected to your ground field by wide copper strap, 5 inch minimum, with no bends. The ground field can either be a broadcast grade radial field, or a sufficiently sized Ufer ground system. A single rod will likely do more harm than good because it's impedance will be too high to soak up the charge without excessive voltages. Letting your equipment "float" with lightning voltage is a viable protective strategy if you can guarantee adequate personnel isolation. This is a good way to deal with rocky mountaintop repeater installations where a good ground is unobtainable. The single point "ground" system will insure that there are no *differential* voltages across your equipment. So even if the equipment rises to several thousand volts above ground during a strike, no voltage differentials will exist that can drive damaging currents through the equipment.

Then there is the subject of cable routing on the tower, section bonding, plumber's delight antenna construction, etc, that needs to go along with all this to insure negligible ground loops in the cable runs. An insulated cable going up the side of your tower forms a half turn loop that will receive very high induced shield currents from the stroke current travelling down the tower body. You need to bond the coax shield to the tower in several places on the way down to short out this transformer action.

Blitz Bugs are practically worthless as protective devices. About all they're good for is to prevent the lightning current from burning down your house (maybe). They won't protect solid state gear at all. You need a properly engineered suppressor that mechanically bonds the shield to ground and that uses a sufficiently quick gas discharge tube to short the inner conductor when exposed to lightning voltages, but that will appear to be an open circuit to your normal RF voltages. There should be a DC blocking capacitor in the suppressor on the equipment side of the discharge tube. This will give the tube time to fire while the capacitor is charging, and thus keep the spike voltage out of your equipment. I recomend the Polyphaser NEMP line for this purpose. If you need DC pass capability, such as to power a mast mount preamp, a properly decoupled choke arrangement can be used to route the DC power around the blocking capacitor. The Polyphaser IS series is designed for this use.

I've only scratched the surface with this little discourse. You need to visit broadcast and two way sites and inspect how real systems are done. You need to read the books on the subject. You need to model your entire system and apply Kirchoff's Laws to it. Look especially at any inductances in the path to ground, and any mutual inductances between your mast and cabling, or between one cable and another. Figure on between 3,000 and 15,000 amps at a frequency of no less

than 2 MHz for the main surge. Also consider that there will be reduced components all the way up into the UHF spectrum. Even very small inductances can develop large voltages under these conditions.

Gary

--

Gary Coffman KE4ZV | "If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam." | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

End of Ham-Ant Digest V93 #81
